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SEISMIC SAFETY AND SAFETY ELEMENTS

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OF THE YUBA COUNTY GENERAL PLAN

PREPARED BY THE YUBA COUNTY PLANNING DEPT.

BEFORE THE BOARD OF SUPERVISORS

OF THE COUNTY OF YUBA

IN RE:

RESOLUTION ADOPTING SEISMIC SAFETY AND SAFETY ELEMENTS OF THE YUBA COUNTY GENERAL PLAN

RESOLUTION NO. 1980-204

WHEREAS, Sections 65300 and 65302 of the Government Code require that each planning agency shall prepare and the legislative body of each County shall adopt seismic safety and safety elements as part of the County General Plan, and

WHEREAS, on May 14 and May 28, 1980, the Yuba County Planning Commission conducted public hearings on the proposed seismic safety and safety elements, and

WHEREAS, the Yuba County Planning Commission recommended adoption of the elements with the following changes:

(1) Sub-section (d) of page 43 should read: "Access to water storage area from the residential dwelling should be provided with an all weather surface road. The all weather surface road should be: (1) a minimum of twelve (12) feet wide, (2) the gravel should be crushed 3/4" and minus, and (3) the depth of the gravel should be 6 inches." This section applies only to a water storage area or facility which is located in an isolated area and away from the residence.

(2) Section 3 "Water Supply" on page 43 should read: "All new residential dwelling units built in the foothill areas shll provide at least one of the following fire protection measures:

(a) A minimum of 30' brush clearance around each residential structure, as required by the State;

(b) Fire-resistant asphalt shingles and stone, brick or cement block walls be used in place of wood; (this will further reduce fire insurance costs);

(c) Where water is supplied by individual wells, each parcel be provided with a water storage facility of no less than 2,000 gallon capacity. The storage facility be provided with standard valves and that outlets be within eight (8) feet of firm road surface. A variety of tanks, swimming pools, and/or ponds are acceptable.

(3) An additional requirement shall be added for all new residential development in the foothill areas where water is supplied by individual wells: "Where water supply is provided by electric pump, the main electrical service shall be located at the pump with a sub-panel located in the structure to prevent a structural fire from disrupting access to water supply."

WHEREAS, on July 15, 1980, the Yuba County Board of Supervisors conducted public hearings on the proposed seismic safety and safety elements,

NOW THEREFORE BE IT RESOLVED that the Board of Supervisors of Yuba County hereby adopts the seismic safety and safety elements as part of the Yuba County General Plan in a form on file with the Clerk of the Board of Supervisors and including the changes recommended by the Planning Commission.

PASSED AND ADOPTED by the Board of Supervisors of the County of Yuba, State of California, at the regular meeting thereof on the 26th day of August, 1980, by the following vote:

AYES: Supervisors Deveraux, Sperbeck, Pharris, Waltz and Parker

NOES: None

ABSENT: None

Chairman

ATTEST: PATRICIA H. STEWART,
Clerk of the Board of Supervisors

Patricia H Stewart

APPROVED AS TO FORM AND LEGAL SUFFICIENCY

Dennis A. Barlow

DENNIS A. BARLOW, County Counsel
DATE: August 11, 1980

YUBA COUNTY BOARD OF SUPERVISORS

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PREFACE

As a result of legislation adopted in 1971, seismic safety and safety elements are required to be a part of the General Plan of each county and city.

Section 65302 (f) of the Government Code states that the Seismic Safety Element shall consist of:

A. An identification and appraisal of seismic hazards such as susceptibility to surface ruptures from faulting, to ground shaking, to ground failures, or to the effects of seismically induced waves such as tsunamis and seiches.

B. An appraisal of mudslides, landslides, and slope stability as necessary geologic hazards that must be considered simultaneously with other hazards such as possible surface ruptures from faulting, ground shaking, ground failure and seismically induced waves.

Government Code Section 65302.1 requires a safety element of all city and county general plans, as follows:

> A safety element for the protection of the community from fires and geologic hazards including features necessary for such protection as evacuation routes, peak load water supply requirements, minimum road widths, clearances around structures, and qeologic hazard mapping in areas of known geologic hazard.

The basic intent of this law and this document is to encourage the County to take seismic hazards and other safety considerations into account in the planning process. Consideration will be given to various hazards associated with earthquakes, fires, geologic hazards, and other safety concerns in terms of the location of new structures and facilities, criteria utilized

in design, and evaluation of existing structures and facilities and the adequacy of existing codes and ordinances. This report will act as a statement of policy and a source of information regarding potential hazards for projects being considered by the Planning Commission and Board of Supervisors. The desired result is to reduce the loss of life, injuries, damage to properties and dislocations resulting from future fires, flooding and geologic or seismic disturbances.

SUMMARY OF GOALS, OBJECTIVES, AND IMPLEMENTATION

A. SEISMIC SAFETY:

GOAL: The general goal is to protect the lives and property of the citizens of Yuba County from unacceptable risk resulting from seismic hazards.

OBJECTIVES:

1. To define the nature of potential seismic hazards in various parts of the County in order that this information shall be used as a guide for risk reduction measures for all new construction, and for structural hazard abatement where needed in existing development.

2. To provide a guide to planning for appropriate uses of land in relation to identified seismic hazards.

3. To increase public awareness of seismic hazards, and the means to mitigate the effects of these hazards.

IMPLEMENTATION:

1. The Seismic Safety Element shall be integrated with other General Plan Elements of Yuba County.

2. Yuba County shall adopt an Open Space Zoning in all seismic hazardous areas.

3. Yuba County shall maintain strict enforcement of seismic safety standards for all new construction as required by the most current Uniform Building Code.

4. Yuba County shall review all future developments by using all available seismic data and taking into account

recommendations from the Seismic Safety and Safety Elements.

5. Yuba County shall control all development on steep slopes to minimize slide danger, erosion and siltation of streams and reservoirs.

6. Yuba County shall require that soils and geologic reports be prepared by qualified persons for construction or extensive grading in potential seismic problem areas.

7. Yuba County shall require that studies be made to determine the exact area of a fault zone prior to permitting major construction in the immediate vicinity of a fault.

8. Yuba County Emergency Services Plan shall be reviewed to insure adequacy following a seismic occurrence.

9. Yuba County shall assure that population densities and development are kept to a minimum in areas of geologic hazard, such as active fault zones and land slide areas.

B. SAFETY:

GOAL: The general goal is to protect the lives and property of the citizens of Yuba County from unacceptable risk resulting from flood, fire, and airport hazards.

OBJECTIVES:

1. To identify and establish those areas where public safety may be jeopardized by construction or improper land use.

2. To disseminate information regarding public safety hazards through the Office of Emergency Services.

3. To work in conjunction with various federal, state, and local agencies towards the resolution of intergovernmental problems associated with disaster prevention and response.

IMPLEMENTATION:

1. The Safety Element shall be integrated with other General Plan Elements of Yuba County.

2. Yuba County shall consider fire hazards in all land use and zoning decisions, environmental review, and subdivision review.

3. Yuba County shall develop standards for widths, grades, and curves of new roads to permit passage and maneuvering of emergency vehicles. Require multiple access where feasible.

4. Yuba County shall consult with the appropriate fire service district for particular regulations prior to approving a project.

5. Yuba County shall encourage continued use of education programs in public and private schools by various fire

protection agencies to foster public awareness of fire hazards.

6. Yuba County shall require that new residential developments be designed to minimize both volume and velocity of surface runoff and soil erosion.

7. Yuba County shall insure future development in areas subject to flooding be so designed to eliminate or minimize flood hazards.

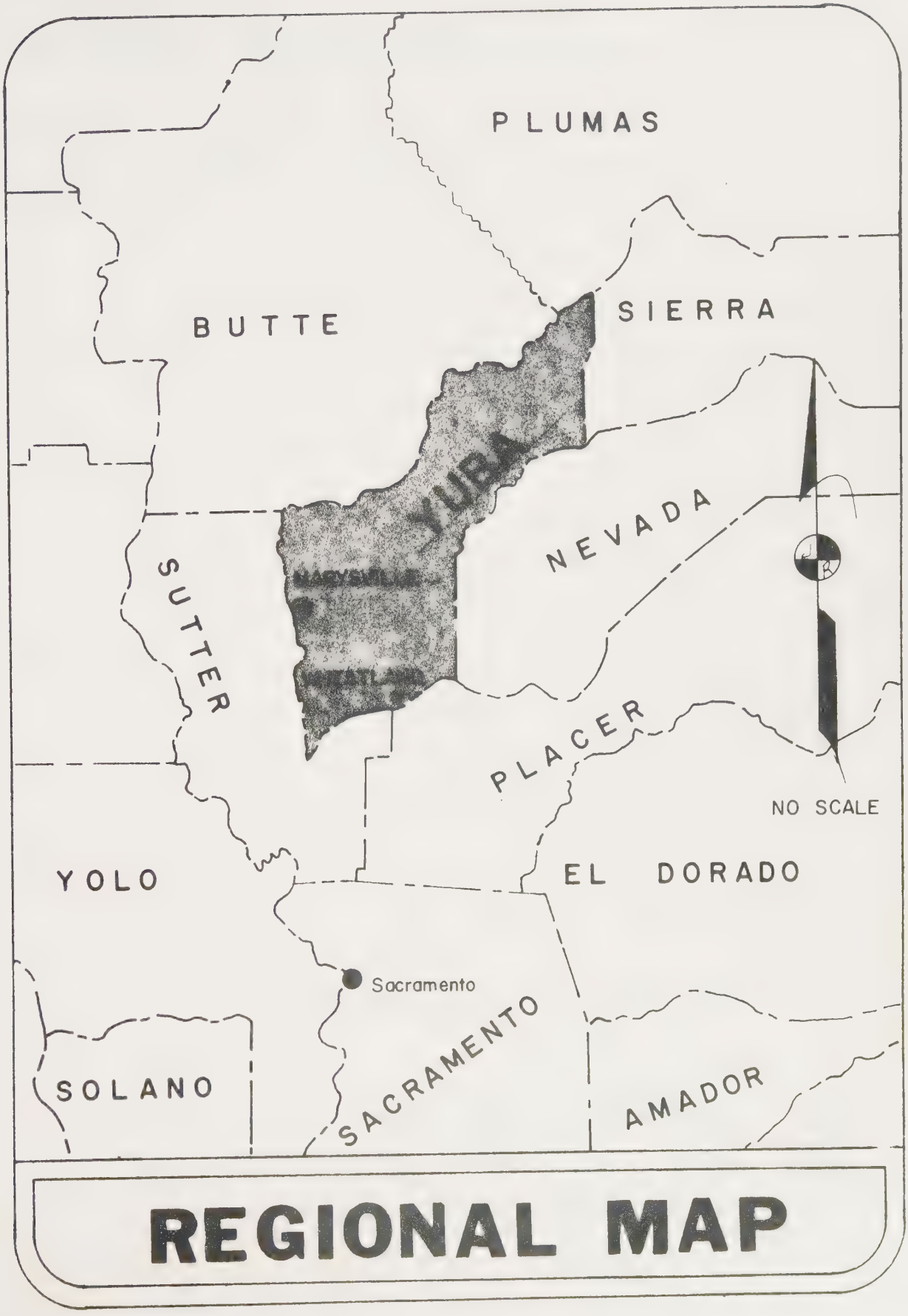
8. Yuba County shall continue to request the U.S. Corps of Engineers to prepare Flood Plain information in every existing and potential problem area in order to apply regulations to eliminate or minimize flood hazards.

9. Yuba County shall identify, construct, and publicize transportation routes designated as evacuation routes in time of disaster.

10. Yuba County shall make information concerning responses to levels and types of disasters available to the general public.

11. Yuba County shall adopt an Airport Approach Zone to regulate all developments within the airport safety areas and the surrounding areas.

FIGURE 1



REGIONAL MAP

RELATIONSHIP TO OTHER GENERAL PLAN ELEMENTS

The General Plan consists of nine elements which are mandated by the state, however, local agencies are free to include optional elements according to the needs of the local planning area. The individual elements of the General Plan present specific policies, but each element must be consistent and serve as a cohesive unit with the other elements to provide an integrated General Plan in order to provide sound planning for future growth and change within each political jurisdiction.

A. HOUSING:

The Housing Element identifies the housing needs and formulates standards and plans for the improvement of the housing conditions. A Housing Element also is a blueprint of social concern. The Housing Element is interrelated with the Land Use, Circulation, Seismic Safety and Safety Elements since the location of where people live, their mobility and their access to the goods and services and employment, awareness of potential problems such as flooding, ground faulting, shaking and failures are interrelated concerns of these five elements.

B. CIRCULATION:

The Circulation Element identifies the general location of existing and proposed major thoroughfares, transportation routes, terminals and facilities. Circulation patterns critically effect the effectiveness of a local agency to respond to emergencies. An efficient cir-

culation pattern can dramatically cut down the response time in providing police, fire and rescue service during an emergency situation. Also, the circulation system is one of the major sources of noise pollution and has a direct impact on the quality of life.

C. LAND USE:

The Land Use Element designates the general location and extent of the uses of the land for housing, commercial, industry, open space, and other categories of public and private uses of the land. The Seismic Safety and Safety Elements provide information and policies regarding natural and man-made hazards which need to be recognized in the land use element.

D. OPEN SPACE AND CONSERVATION:

The Open Space and Conservation Elements identifies types and uses of open space and natural resources in each political jurisdiction, and establishes goals and policies for the optimum use of these environmental features. It is also the intent of the Elements to provide a planning framework for future decisions regarding the preservation, utilization, and development of the natural environment within each city and county. Land use and circulation may then be planned in such a way as to avoid unnecessary consumption of natural resources and protect watershed areas.

E. NOISE:

The Noise Element is related more closely to the Circulation, Land Use, and Housing elements, since it provides noise level standards related to the compatibility of various land uses. Hospitals and educational facilities, for example, cannot tolerate as high an ambient noise level as would a shopping center. The Noise Element is also closely related to the Open Space Element since noise can adversely impact the enjoyment of quiet pursuits in open space.

F. SCENIC HIGHWAYS ELEMENT:

The Scenic Highways Element identifies those highways designated by the State of California as eligible for official scenic highway status and streets or routes designated as scenic by local agencies. The Scenic Highways Element relates directly to the Open Space and Circulation Elements and indirectly to the Land Use Element.

SEISMIC ELEMENT

1. INTRODUCTION:

The Seismic Safety Element provides information that relates directly to the Land Use, Housing, Open Space, Circulation and Safety Elements. Land use decisions must be made in the light of the very best information available when public safety is the issue. Therefore, the application of this element to specific land use decisions shoul be made on a case by case basis only. In many situations, the information described in this report is only a starting point for the detailed geologic investigations that are warranted by the circumstances. These will ordinarily be undertaken by the sponsor of a project in preparing an environmental impact report or an engineering feasibility study.

2. DEFINITION OF TERMS:

Acceptable risk: The level of risk below which no specific action by local government is deemed necessary, other than making the risk known.

Active Fault: A fault that has moved in recent geologic time and which is likely to move again in the relatively near future.

Avoidable risk: Risk not necessary to take because the individual or public goals can be achieved at the same or less total "cost" by other means without taking the risk.

Fault: A plane or surface in earth materials along which

failure has occurred and materials on opposite sides have moved relative to one another in response to the accumulation of stress in the rocks.

Ground Failures: Include mudslide, landslide, liquefaction subsidence.

Inactive Fault: A fault which shows no evidence of movement in recent geologic time and no evidence of potential movement in the relatively near future.

Seiches: Earthquake-induced waves in lakes or ponds.

Seismic: Pertaining to or caused by earthquake.

Seismic Hazards: Hazards related to seismic or earthquake activity.

Soil Liquefaction: Change of water saturated, cohesionless soil to liquid, usually from intense ground shaking; soil loses all strength.

Surface ruptures from faulting: Breaks in the ground surface resulting from fault movement.

Unacceptable risk: Level of risk above which specific action by government is deemed necessary to protect life and property.

3. BACKGROUND:

Earthquake losses in California through the remainder of this century, assuming that additional significant countermeasures are not taken, have recently been estimated at approximately $20 billion (Urban Geology Master Plan, California Division of Mines and Geology). Estimates of potential loss of life for this period range well up into the thousands

and most of this loss is preventable.

The most widespread effect of an earthquake is ground shaking. This is also usually (but not always) the greatest cause of damage. Structures of all types, including engineered structures and public utility facilities, if inadequately constructed or not designed to withstand the shaking force, may suffer severe damage or collapse. The vast majority of deaths during earthquakes are the result of structural failure due to ground shaking. Most such deaths are preventable, even with present knowledge. New construction can and should be designed and built to withstand probable shaking without collapse. The greatest existing hazard in the State is the continued use of tens of thousands of older structures incapable of withstanding earthquake forces.

A second effect of earthquakes is ground failure in the form of landslides, rock falls, subsidence and other surface and near-surface ground movements. This is often the result of complete loss of strength of water-saturated sub-surface foundation soils ("liquefaction"). Most such hazardous sites can be either avoided or stabilized if adequate geologic and soil investigations are utilized.

Another damaging effect of earthquakes is ground displacement (surface rupture) along faults. Such displacement of the earth's crust may be vertical, horizontal or both and may offset the ground by as much as 30 feet.

Other damaging effects of earthquakes include seiches (waves in lakes or reservoirs due to tilting or displacement of the bottom or margin). The failure of dams due to shaking or fault displacement causing overtopping (from seiches or massive landsliding into the reservoir) can be particularly disastrous.

4. SEVERITY OF EARTHQUAKES:

The severity of earthquakes is usually measured in terms of magnitude and intensity. Magnitude is an instrumental measure of the amplitude of the seismic waves and is related to the amount of energy release - an amount that can be estimated from seismographic recordings. Magnitude assigns a value to the calculated energy release, this system can rank earthquakes and compare them one to another. By this method, an earthquake is rated independently of the place of observation. In the United States, the magnitude of earthquakes is expressed according to the Richter Magnitude Scale.

Intensity is a subjective measure of the force of an earthquake at a particular place as determined by the physical manifestations, i.e., its effects on persons, structures, and earth materials. The intensity of an earthquake relates to local soil, groundwater, foundation conditions, type and design of structures, and duration of shaking. Intensity ratings, therefore, are based on visual observation and are not measured with instruments. The principal scale in use, today, in the United States is the Modified Mercalli, shown on Table I, page 15 .

TABLE 1

Modified Mercalli scale of earthquake intensities.

THE MERCALLI INTENSITY SCALE

(As modified by Charles F. Richter in 1956 and rearranged)

If most of these effects are observed	*then the intensity is:*
Earthquake shaking not felt. But people may observe marginal effects of large distance earthquakes without identifying these effects as earthquake-caused. Among them: trees, structures, liquids, bodies of water sway slowly, or doors swing slowly.	*I*
Effect on people: Shaking felt by those at rest, especially if they are indoors, and by those on upper floors.	*II*
Effect on people: Felt by most people indoors. Some can estimate duration of shaking. But many may not recognize shaking of building as caused by an earthquake; the shaking is like that caused by the passing of light trucks.	*III*
Other effects: Hanging objects swing. *Structural effects:* Windows or doors rattle. Wooden walls and frames creak.	*IV*
Effect on people: Felt by everyone indoors. Many estimate duration of shaking. But they still may not recognize it as caused by an earthquake. The shaking is like that caused by the passing of heavy trucks, though sometimes, instead, people may feel the sensation of a jolt, as if a heavy ball had struck the walls. *Other effects:* Hanging objects swing. Standing autos rock. Crockery clashes, dishes rattle or glasses clink. *Structural effects:* Doors close, open or swing. Windows rattle.	*V*
Effect on people: Felt by everyone indoors and by most people outdoors. Many now estimate not only the duration of shaking but also its direction and have no doubt as to its cause. Sleepers wakened. *Other effects:* Hanging objects swing. Shutters or pictures move. Pendulum clocks stop, start or change rate. Standing autos rock. Crockery clashes, dishes rattle or glasses clink. Liquids disturbed, some spilled. Small unstable objects displaced or upset. *Structural effects:* Weak plaster and Masonry D* crack. Windows break. Doors close, open or swing.	*VI*
Effect on people: Felt by everyone. Many are frightened and run outdoors. People walk unsteadily. *Other effects:* Small church or school bells ring. Pictures thrown off walls, knicknacks and books off shelves. Dishes or glasses broken. Furniture moved or overturned. Trees, bushes shaken visibly, or heard to rustle. *Structural effects:* Masonry D* damaged; some cracks in Masonry C*. Weak chimneys break at roof line. Plaster, loose bricks, stones, tiles, cornices, unbraced parapets and architectural ornaments fall. Concrete irrigation ditches damaged.	*VII*
Effect on people: Difficult to stand. Shaking noticed by auto drivers. *Other effects:* Waves on ponds; water turbid with mud. Small slides and caving in along sand or gravel banks. Large bells ring. Furniture broken. Hanging objects quiver. *Structural effects:* Masonry D*, heavily damaged; Masonry C* damaged, partially collapses in some cases; some damage to Masonry B*; none to Masonry A*. Stucco and some masonry walls fall. Chimneys, factory stacks, monuments, towers, elevated tanks twist or fall. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Decayed piling broken off.	*VIII*
Effect on people: General fright. People thrown to ground. *Other effects:* Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes. Steering of autos affected. Branches broken from trees. *Structural effects:* Masonry D* destroyed; Masonry C* heavily damaged, sometimes with complete collapse; Masonry B* is seriously damaged. General damage to foundations. Frame structures, if not bolted, shifted off foundations. Frames racked. Reservoirs seriously damaged. Underground pipes broken.	*IX*
Effect on people: General Panic. *Other effects:* Conspicuous cracks in ground. In areas of soft ground, sand is ejected through holes and piles up into a small crater, and, in muddy areas, water fountains are formed. *Structural effects:* Most masonry and frame structures destroyed along with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes and embankments. Railroads bent slightly.	*X*
Effect on people: General panic. *Other effects:* Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. *Structural effects:* General destruction of buildings. Underground pipelines completely out of service. Railroads bent greatly.	*XI*
Effect on people: General panic. *Other effects:* Same as for Intensity X. *Structural effects:* Damage nearly total, the ultimate catastrophe. *Other effects:* Large rock masses displaced. Lines of sight and level distorted. Objects thrown into air.	*XII*

*Masonry A: Good workmanship and mortar, reinforced, designed to resist lateral forces.
Masonry B: Good workmanship and mortar, reinforced.
Masonry C: Good workmanship and mortar, unreinforced.
Masonry D: Poor workmanship and mortar and weak materials, like adobe.

Source: California Division of Mines and Geology, Bulletin 198.

5. PHYSIOGRAPHIC PROVINCES:

Yuba County includes portions of two major physiographic provinces. The western one-third of the County is in the Sacramento Valley Province, which is underlain by sedimentary rocks 15,000 feet thick, with 100-200 feet of recent sediment overlying the rocks (Tertiary Formations). The eastern two-thirds of the County is in the Sierra Nevada Province and is underlain by igneous and metamorphic rocks.

A. SACRAMENTO VALLEY PROVINCE

The Sacramento Valley is a nearly level alluvial plain, separated geologically from the San Joaquin Valley by a buried northeast-trending fault in the vicinity of Stockton. On the north, the valley terminates at the Klamath Mountain foothills. The valley is drained by the Sacramento River.

Recent alluvium covering the greater part of the valley intermingles with numerous stream deposits of silt, sand and gravel which were deposited by streams from the hills to the east. These recent deposits consist mainly of reddish, sandy clay and black humus topsoil overlying unconsolidated sand, silt, clay and gravel.

B. SIERRA NEVADA PROVINCE

The Sierra Nevada is a westward tilted fault block of great magnitude. The block has a high, multiple-fault scarp face on the east front and a more gentle, fault-bound west front which disappears under the sediments

of the Sacramento Valley. The bedrock of the Sierra Nevada province consists commonly of Paleozoic and Mesozoic metasediments and volcanics intruded by a Mesozoic granitic batholith. The Sierra Nevada Mountains form the major portion of the eastern half of Yuba County.

Along the western slope of the Sierra Nevada range, tertiary sediments, volcanics, and isolated areas of upper Cretaceous sediments of the Sierra Nevada foothills dip westward beneath the Sacramento Valley. Highly metamorphosed sedimentary and igneous rocks lie along the west and northern edges of the Sierra Nevada.

6. SEISMIC HISTORY AND FAULTING:

Yuba County and the surrounding area are located on the western portion of a faulted and downwarped series of ancient metamorphic rocks of the Western Sierra Nevada Mountain Range. Granitic rocks associated with Mesozoic thrust faulting are located in the eastern portion of the County. In the western portion of the County, gently folded younger and sometimes faulted sediments of the Sacramento Valley overlie older metamorphic rocks similar to those of the Sierra Nevada. Yuba County is very stable in terms of exposure to the effects of seismic activity.

The faults found in Yuba County are Pre-Quaternary (older than 2 million years) or without recognized Quaternary movement.

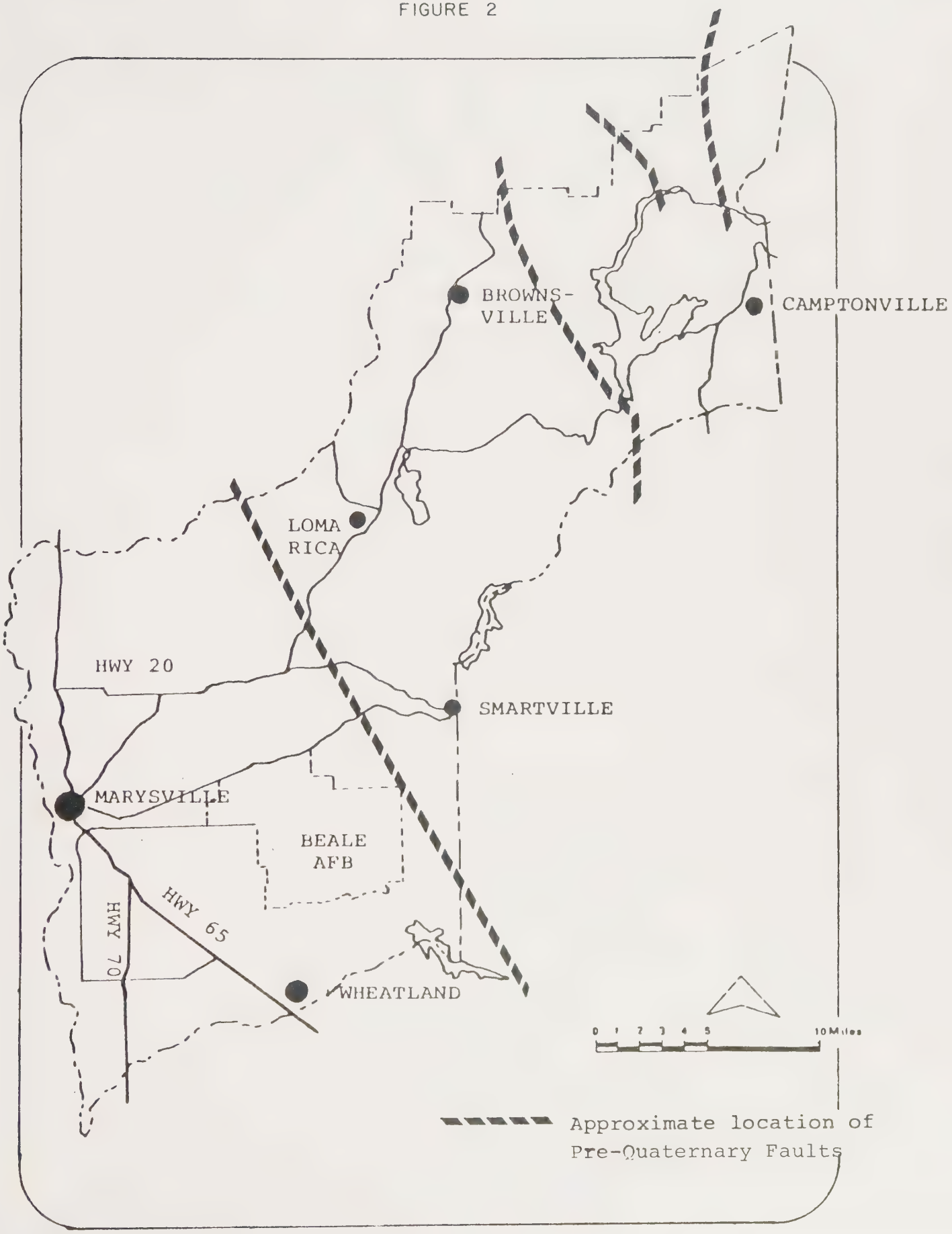
It should be noted that the faults shown in this category should not necessarily be considered "dead". In many cases the evidence may have been destroyed by erosion, or covered by vegetation or by works of man. See Figure 2 for location of faults in Yuba County.

The classification of a fault as inactive does not mean that it will not move, however. The previously inactive Cleveland Hill Fault in Butte County became active on August 1, 1975, resulting in seismic activity which reached a magnitude of 5.7 on the Richter Scale.

The Oroville earthquake was important because it took place in an area where most people did not expect an earthquake of such magnitude. Many geologists and seismologists feel that this earthquake is a fair warning that earthquakes of magnitude 6 can occur anywhere in California and at any time, and that we should plan and design structures accordingly. California's 200 year history is too short to provide a complete record of all possible earthquake magnitudes and locations.

Prior to the 1975 Oroville earthquake, most geologists assumed that the Foothills Fault System was an area of low seismic activity and of low potential seismic hazard. However, after the 1975 Oroville earthquake, all investigators have concluded that the seismic activity and seismic hazard of the Foothills Fault System which include the Swain Ravine, Paynes Peak, and Prairie Creek lineament faults are capable of magnitude 6.5 earthquakes yielding peak horizontal accelerations of at least 0.55 g.

FIGURE 2


BROWNS-
VILLE
CAMPTONVILLE
LOMA
RICA
HWY 20
SMARTVILLE
MARYSVILLE
BEALE
AFB
HWY 65
HWY 70
WHEATLAND
0 1 2 3 4 5 10 Miles
Approximate location of
Pre-Quaternary Faults

The Oroville earthquake, even though a magnitude 6 event, caused relatively little damage because of the very short duration of strong shaking (4 to 5 seconds); indeed, this was an abnormally short duration for an earthquake of this magnitude. Had the strong motion shaking continued for a longer period of time, such as the approximately 12 seconds of strong shaking that occurred in the San Fernando earthquake of 1971, the damage could have been comparable to that sustained in San Fernando.

The lessons learned from the Oroville earthquake are:

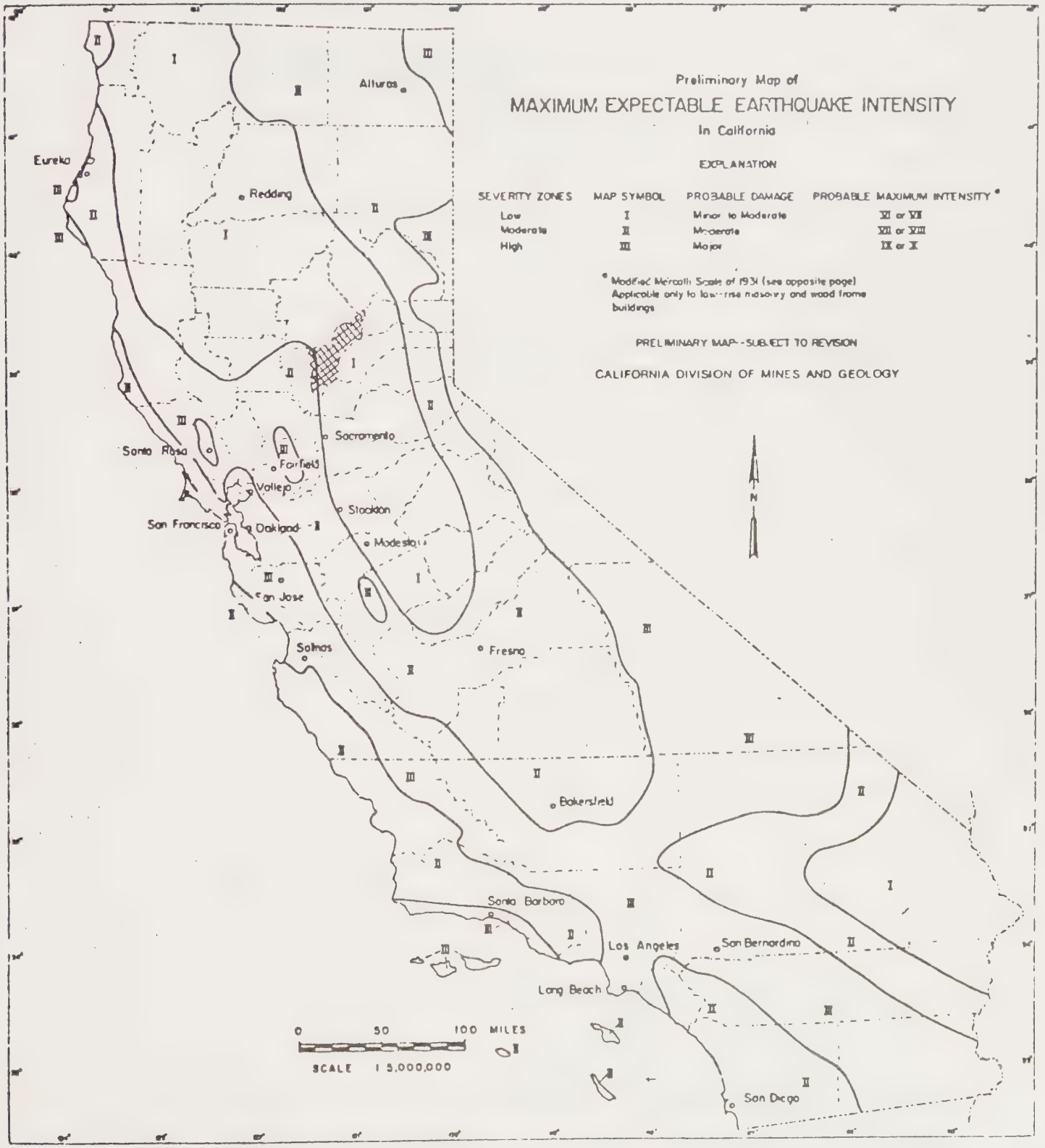
1. Earthquakes of at least magnitude 6 can occur almost anywhere within the State of California.
2. The seismicity, tectonics, and recent geologic history of the Sierra Nevada foothills should be reanalyzed utilizing current geoscientific data and technology.
3. An updated interpretation of California's seismic history and tectonics is needed to produce reliable data from which to determine the recurrence factor of fault activity and earthquakes.
4. We should not be misled by the short duration of strong motion shaking related to the Oroville earthquake.
5. The damage incurred for a given magnitude earthquake appears to have a direct relationship to the duration of strong motion shaking.

6. Structures designed under modern codes and regulations perform better than older structures and the best performance was characteristic of those where quality control was required and practiced.

Other distant faults such as the San Andreas Fault and the Hayward Fault could possibly have a minimal effect on Yuba County if they produced a maximum credible earthquake (8.5 and 7.5 magnitude respectively). The maximum bedrock acceleration in Yuba County from these great earthquakes would be less than .lg. Thus any new construction would not be severely affected by an earthquake of this intensity since all new structures must be built to withstand at least .lg acceleration according to the Uniform Building Code. Most of Yuby County rates a low severity of seismic risk and damage (Figure 3). It should be recognized, however, that while the ground motion from an earthquake originating outside the County may not be devastating it could still create landsliding and seiches. Landsliding could possibly occur on steeper slopes of unconsolidated, recent materials. Seiches could possibly pose a problem in some of the reservoirs in the County.

Therefore, historically even though Yuba County is not seismically active, the possible effects of seismic activity should be taken into consideration by land use decision-makers in the planning process.

FIGURE 3


Preliminary Map of
MAXIMUM EXPECTABLE EARTHQUAKE INTENSITY
In California
EXPLANATION
SEVERITY ZONES
MAP SYMBOL
PROBABLE DAMAGE
PROBABLE MAXIMUM INTENSITY *
Low
I
Minor to Moderate
VI or VII
Moderate
II
Moderate
VII or VIII
High
III
Major
IX or X
* Modified Mercalli Scale of 1931 (see opposite page)
Applicable only to low-rise masonry and wood frame buildings
PRELIMINARY MAP - SUBJECT TO REVISION
CALIFORNIA DIVISION OF MINES AND GEOLOGY
N
Alturas
Eureka
Redding
Santa Rosa
Fairfield
Vallejo
Sacramento
Stockton
San Francisco
Oakland
Modesto
San Jose
Salinas
Fresno
Bakersfield
Santa Barbara
Los Angeles
San Bernardino
Long Beach
San Diego
0 50 100 MILES
SCALE 1:5,000,000

7. OTHER GEOLOGIC HAZARDS:

A. DIFFERENTIAL COMPACTION

Settlement or tilting of structures can occur during earthquakes when one portion of a structure is over one type foundation material and the remainder of the structure is founded on another material. One example is when part of a building is on bedrock in a cut and the remainder of the building is over fill. Shaking due to the vibrations from an earthquake compact the less dense material more than the other. Settlement occurs over the least compacted sediments.

Differential compaction potentially may occur in the same materials and areas that are susceptible to liquefaction. In addition, it can occur where mixed foundation types underlie buildings or other structures. Investigation of a site for the possibility of this occurrence would be a part of the geologic-soils-foundation study.

B. LANDSLIDES AND ROCK FALLS

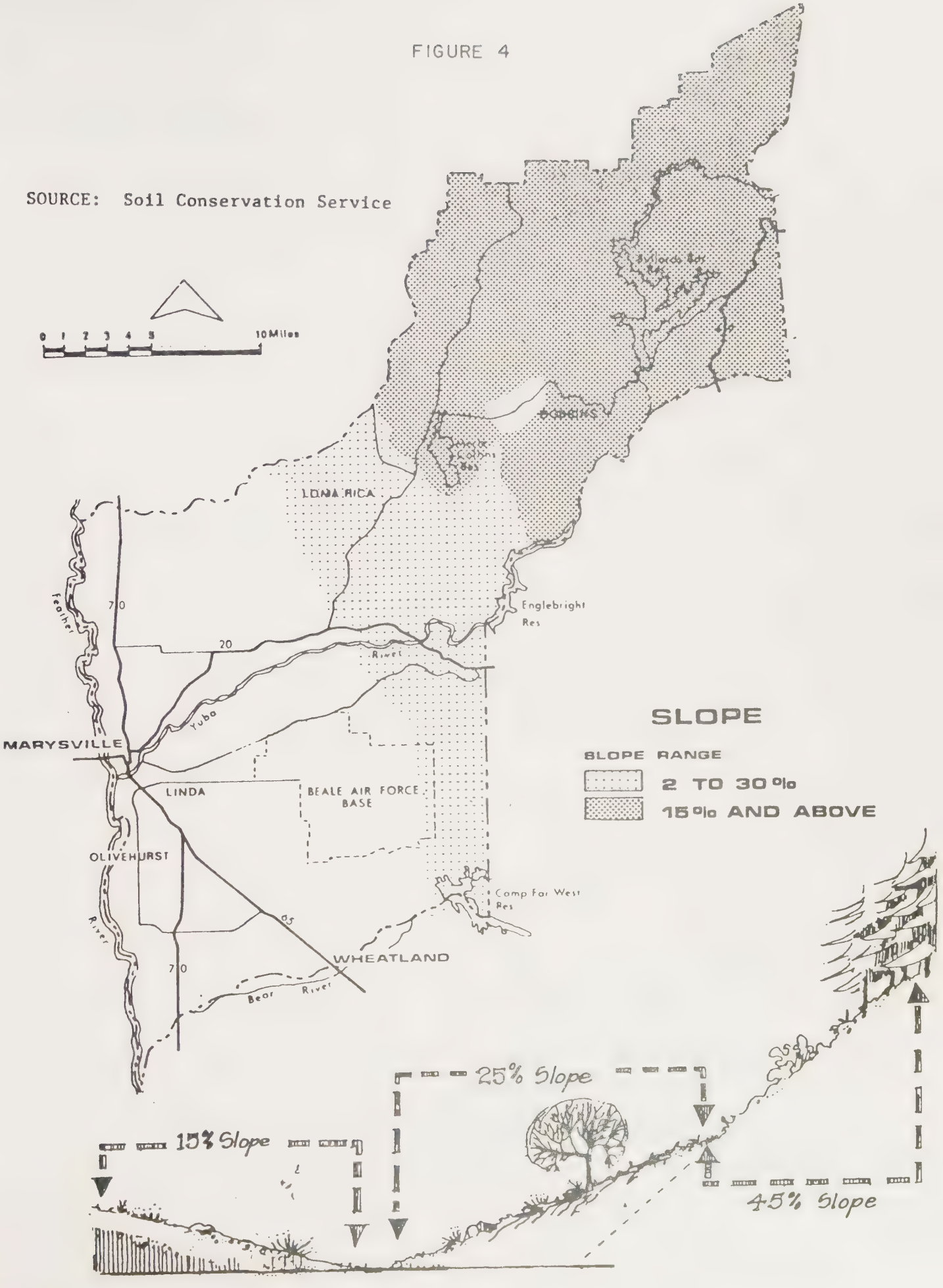
Earthquake-precipitated landslides or rock falls could occur in many areas of eastern Yuba County: along steep slopes formed on fractured granitic or volcanic rocks, along steep construction excavation slopes and on the saturated slopes of earthfill dams. As a rule, slopes of 10 to 15 per cent or more are more easily erodible than level lands.

The type and extent of development on steep slopes must be carefully regulated to insure the safety of residents as well as the quality of the surrounding environment. Areas of Yuba County within which slopes are predominantly in excess of 15 per cent and have the potential for landslides are shown on Figure 4.

The type and extent of development on steep slopes must be carefully considered to insure the safety of residents as well as the quality of the surrounding environment.

FIGURE 4

SOURCE: Soil Conservation Service



SAFETY ELEMENT

1. INTRODUCTION:

The objective of the Safety Element is to introduce safety considerations in the planning process in order to reduce loss of life, injuries, damage to property, and economic and social dislocation resulting from fire (geologic disturbances were discussed in the Seismic Element), flooding and other potential safety hazards in Yuba County.

2. FIRE HAZARDS:

A. INTRODUCTION

The combination of weather, vegetation, and topography found in the rural unincorporated portions of Yuba County creates fire hazard situations as dangerous as any found in the State of California.

The natural fire hazard is greatest in the mountainous areas with lush vegetation, and lowest in the flat valley floor areas having cultivated crops. Using the Fire Hazard Severity Rating System of the California Department of Forestry, nearly all of the foothill and mountain areas are rated as having extreme fire hazard. With the exception of grasslands, virtually all of the mountainous land of the County which is not in the extreme classification is rated as having high fire hazard. No place in the rural County may be considered to have a low fire hazard.

Virtually all fires are started by people, either by design or carelessness. The places of greatest concern for the start of fires are locations where people live, recreate, drive, or work. Once started, fire can quickly blaze out of control in the extremely hazardous natural setting of the County. Fires can spread by airborne brands and cover vast territory with potential for disastrous loss of life and property.

Many existing residential settlements are in areas of extreme natural fire hazard. Smartville, Dobbins, and Challenge are very highly subject to fire hazards and could be the scene of considerable loss by a fire. Other settlements with fewer dwellings are in equally hazardous situations with potential for disaster. Browns Valley, Loma Rica, Brownsville, have numbers of dwellings in fire hazardous settings.

Many of the County's finest recreational facilities are in fire-prone areas with a number of scenic roads going through hills which are tinder dry in the summer months.

The greatest avoidable risk is the development of homes on long dead-end roads in hazardous areas. Planning is essential to provide alternate access routes for settled dead-end roads, both to assure that residents can escape from a fire and that fire fighting equipment can reach the settlements.

Fire protection services vary in quality over the rural areas. Most of the foothill and mountain area is not within a fire district, and receive seasonal fire protection from the Department of Forestry. The Department of Forestry is responsible for fighting wildland fires and also gives protection to structures since it is charged with suppressing all uncontrolled fires in its areas of responsibility. The Department of Forestry provides protection in fire season but generally curtails its operations in the winter. The Department will respond to fires in the winter with what personnel and equipment are available during their off-season. Vast areas are a half hour or more in travel time to the nearest station. However, the Department of Forestry does have aircraft available which reach all portions of the County in five to fifteen minutes.

In addition to losses of life and property, fire poses a threat to the scenic setting of the County and to wildlife habitat. Loss of vegetation can contribute to increased erosion, mud slides, and sedimentation of our reservoirs.

B. FACTORS AFFECTING WILDFIRE BEHAVIOR

The three most important factors to fire behavior are the types of vegetation growing in an area, the climatic and wind patterns of the area, and the topography of the area.

These three criteria were used by the California Division of Forestry in developing the Fire Hazard Severity Scale for California Wildlands. The result is a classification system that provides a practical and logical system for classifying and delineating areas of varying severity of fire hazard.

1. Vegetation:

   To a fire, vegetation is simply fuel. In terms of the amount of fuel they provide there are three vegetative groups to be considered: grass, brush, and timberlands

   The lightest fuel group is grass. Grasslands provide from one to three tons of fuel per acre and are easily ignited when dry. Of the three groups of vegetation, the grasslands are the easiest for fire suppression.

   The heaviest fuel loading is found in the areas of heavy brush and timberlands. These areas are typified as having a growth six or more feet high, providing from thirty to over one hundred tons of fuel per acre. Scrub Oak, Manzanita, and similar plants cover vast areas of the hills. Most of the original forested areas of the County were logged during the early settlement, but many thousands of acres of second growth woodlands and forests of Ponderosa,

Douglas fir, and Sugarpine have reestablished themselves in the Mountains during this century. These forested areas present the heaviest fuel loading conditions.

In terms of vegetative fuel, the least fire-prone portion of the rural County is the agricultural area on the valley floor. The grasslands at the edges of the valley and open grass-covered fields on the valley floor provide several tons of fuel per acre, and are the scene of periodic fires. The irrigated crops and orchards present little fire potential. The most serious fire problems for the Valley are structure fires, and grass fires.

2. Climate:

While the native vegetation provides the fuel for wildfires, it is our climate that sets the state for fires to start and spread rapidly. Yuba County has a Mediterranean-type climate with mild winters and dry summers. During the summer season plants and debris become tinder dry.

In evaluating the hazard of fire, the classification system developed by the Department of Forestry pays particular attention to the number of days of critical fire weather. This is a measure based upon conditions of heat and dry atmospheric conditions which

are highly related to the combustibility of vegetative fuels. The weighting given fire weather reflects statewide trends showing that 75% of all fires of over 300 acres extent occurring between 1959 and 1969 were in areas having 9.5 or more days of critical fire weather per average year. Days of critical fire weather appear to increase the probability that fires will start and that they will spread rapidly enough to become major fires.

All of Yuba County falls into either Class II (1 to 9.5 days of critical fire weather per year) or Class III (more than 9.5 days per year). The information on fire weather was obtained from the Department of Forestry as a single value for each USGS topographic map of the County.

The Valley has a drier climate than the mountain area, but is mostly irrigated and therefore not subject to the same conditions of drought experienced by the mountain land.

A consideration related to climate but not included in the Department of Forestry's rating system is wind patterns.

Wind is an important concern for fire spreading. Winds feed oxygen to fires, act to push the flames and embers to new areas, and contribute to conditions

of fire brand fallout and fire blowup.

3. Topography:

The third component of the fire hazard rating system is the steepness of the topography of the area. Topography accounts for many of the localized changes of rating within the Sierra Range. The steepness of the terrain of the mountains contributes to the potential outbreak and spread of fire in several ways. On south-facing slopes, steep topography affects the angle at which the sun's rays strike the ground and can produce temperatures and drying conditions which are much more severe than on flat land. Once a fire has started, steep slopes tend to make fuel available to a fire by placing plant material above the flames where it preheats and quickly ignites. Steep hills can contribute to wind patterns which increase the speed of fire spread. Finally, steep terrain greatly impedes efforts to suppress fires. In very rugged or steep country it is extremely difficult to get firefighters and equipment to a fire except by air.

Each class of fuel loading, fire weather and slope is assigned a severity factor value and then multiplied in a matrix form to produce a Fire Hazard Severity Scale as shown in Table 2.

TABLE [2] Fire Hazard Severity Scale

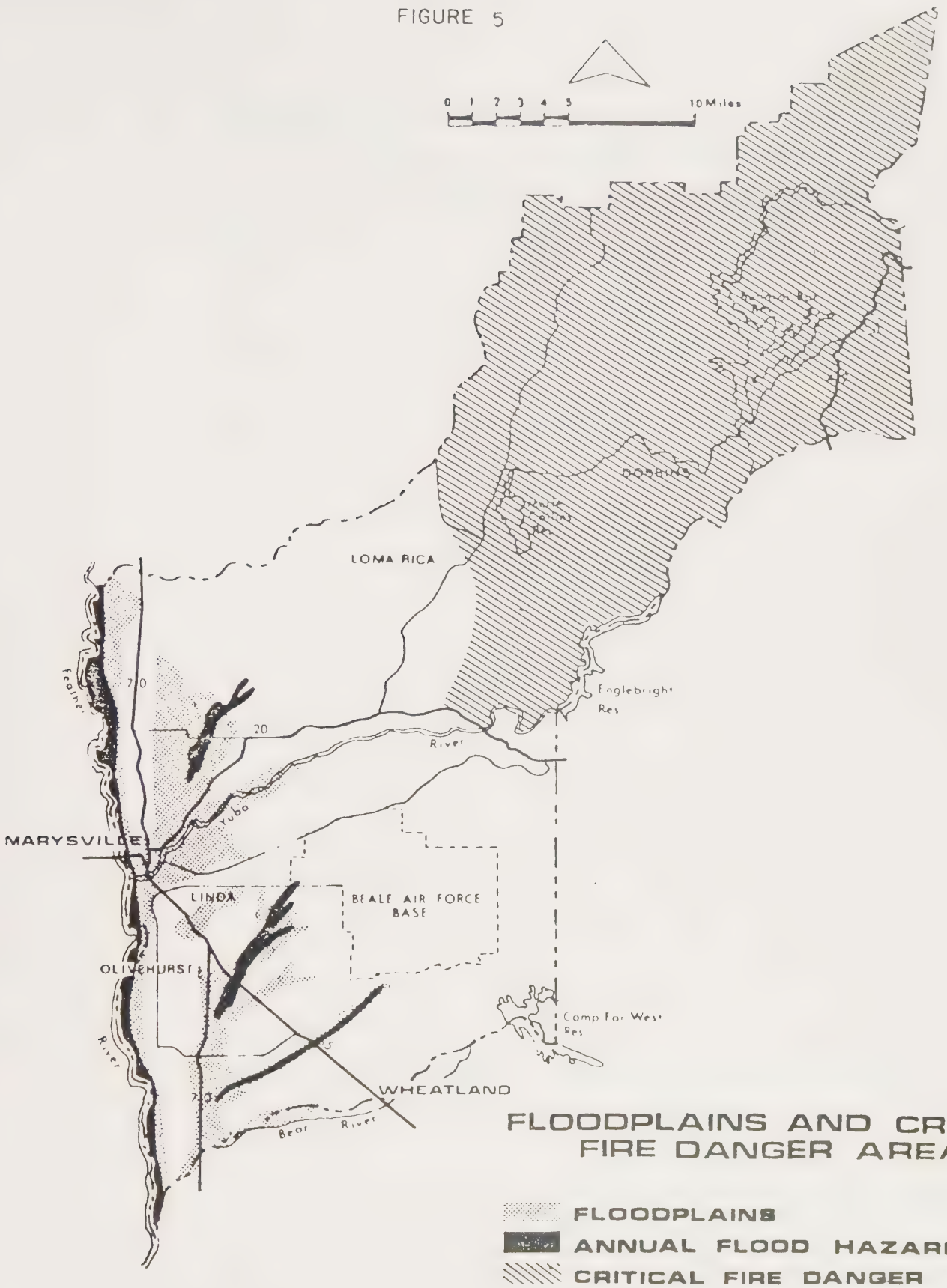
CRITICAL FIRE WEATHER FREQUENCY ↕	I			II			III		
FUEL LOADING ↔	SLOPE %			SLOPE %			SLOPE %		
	0-40	41-60	61+	0-40	41-60	61+	0-40	41-60	61+
Light (Grass)									
Medium (Scrub)									
Heavy (Woods - Brushwood)									

MODERATE HIGH HAZARD EXTREME HAZARD

Applying the Fire Hazard Severity Scale to the wildland areas in Yuba County indicates that there is a serious wildland fire potential in the County. Due to the rugged terrain, highly inflammable timber and brush covered lands, and dry, long summers, most of the foothill and mountainous area of the County is designated either extreme or high hazard. (Figure #5)

Any proposed development located in an extreme or high fire hazard area should be carefully reviewed by the County and appropriate fire prevention agency to assure that the overall hazard is reduced through application of appropriate fire prevention and protection requirements.

FIGURE 5



SOURCES: U. S. Army Corps of Engineers
California Division of Forestry
U. S. Forest Service

C. STRUCTURAL FIRE HAZARDS

Structural fires pose a greater threat to life and property than do wildland fires since most of our time is spent within structures - homes, offices, factories, and etc. Most structural fires are due to negligence of people; however, some are caused by deliberate action.

Generally, there are five ways to reduce structural fire hazards:

(a) Improve fire safety technology.

(b) Change the type of materials used in the structure.

(c) Change the building design and construction.

(d) Change the code regulation and enforcement.

(e) Add automatic fire detection and suppression devices.

Fire safety lags behind in the design of buildings. Sealed windows help insure that the heating and air conditioning systems will work more efficiently; however, during a fire they can hold in the heat and hot gases of the fire and make it more difficult for persons trapped inside to escape through such sealed windows.

Structures built in the foothill areas of the County face particularly hazardous conditions. Structures must be designed to reduce the risks of being engulfed in flames from wildland fire. Flammable building materials such as wood used for siding and

roofing could result in a structure being damaged or destroyed by a wildfire. In order to reduce the risk from a wildland fire, fire-resistant asphalt shingles and stone, brick or cement block walls should be used in place of wood. Also, adequate brush clearance around structures should be undertaked to further reducing the risk from a wildland fire.

There are a number of standards dealing with fire hazards contained within four codes, and they are:

(a) Building Code - Applies mainly to new construction and alterations.

(b) Fire Prevention Code - Govern the maintenance of the building once a building is constructed, and govern the introduction of materials into the building for the sake of fire safety.

(c) Electrical Code - Sets requirements for materials and equipment used in electrical systems.

(d) Mechanical Code - Applies to heating, ventilating and air conditioning.

The responsibility for reducing the risks of fire must be borne increasingly on the shoulders of the owners of structures. With the adoption of the 1976 Uniform Building Code, and using the Uniform Fire Code as a guide, structures can be better designed and constructed with fire safety in mind, and adequate heat and smoke detectors can be installed. Fire can be further

reduced by having an aggressive fire safety public education program.

D. SAFETY OF ACCESS ROUTES AND WATER SUPPLY:

The major concerns for loss of life and property are for the areas with significant amounts of residential settlement and with facilities which attract people. The degree of risk associated with these residential areas and facilities is greatly influenced by the ease of access into and out of the areas in which they are located. To protect property it is essential that firefighting equipment be able to reach a fire quickly. To protect life it is essential that people have a safe and adequate way to escape from a burning area. Some settlement has occurred in areas which are so remote that firefighting equipment cannot be expected to quickly reach a fire. Some roads are so narrow, steep, or winding that getting equipment in and people out are major problems. Cars trying to escape from a fire may block fire equipment trying to reach the blaze. Some of the most frightening conditions are found on long deadend roads where escape routes may be completely cut off.

Another concern for fire safety is the adequacy of water supply for fire suppression. Outside of the urban service areas there is a general lack of fire hydrants, although several areas do have piped water from mutual

water systems. For most of the mountains and much of the Valley floor interim water supplies for fire protection must be supplied on each building site or subdivision. Without large onsite water supplies, owners of structures in the rural and mountainous areas simply cannot count on adequate fire protection even if the fire service is nearby. Unfortunately, many homes were built in the past without adequate water supplies, and many homes may not have maintained their water supplies even if originally provided.

E. LOSS OF RESOURCES:

In additon to the direct threats to human safety which are posed by fire, there are a number of risks of temporary or permanent losses of resources due to fire. Resources and environmental losses may be of several types:

(1) Erosion and Runoff:

Erosion and increased runoff of precipitaion are serious aftereffects of fire. Under extreme conditions loss of vegetation can lead to landslides and mudflows and may contribute to the severity of flood hazards by allowing increased quantities of water to run off the burned area.

The problem of erosion is particularly significant since most of the mountain territory of the County serves as watershed for reservoirs which contribute

to the water supply of the County.

The increased run off of water following a fire may increase the flow of water in streams and add to the problems of stream bank undercutting.

(2) Economic:

At the present time Yuba County has some commercial timber harvesting. Some plant communities such as the Douglas Fir and Ponderosa Pine forests will assume a more commercial value in the future. The primary economic threat of fires in the mountainous areas is to the productive range lands. Fortunately, the grasses used for ranging animals are the most easily reestablished of the plant groups of the county.

(3) Scenic:

Fire can obviously destroy the beauty of large areas. Since the loss is primarily related to damage to the vegetative cover, the impacts of fire on scenery are essentially the same as the impacts on vegetation. If the fire occurs in grasslands or scrub vegetation, the loss may be only seasonal. If erosion follows the fire, the loss may be severe and long lasting. If the fire damages plant communities which require long periods to reach maturity, then the loss will be correspondingly greater. Some plant communities such as the Ponderosa Pine and Douglas Fir forests

have emotional attachments for many people and their loss would be deeply felt.

F. FIRE PROTECTION:

Unincorporated Yuba County contains five local fire protection districts in addition to the California Department of Forestry and the United States Forest Service. Outside the urban service areas, fire protection services are provided by the California Department of Forestry, the Linda Fire Protection District, the Plumas-Brophy Fire Protection District, the Olivehurst Fire Protection District, the Dobbins-Brownsville Fire Protection District and the Smartville Fire Protection District. These districts provide year-round service.

The principal fire protection agency for the mountains is the California Department of Forestry, which maintains three fire stations in the County. These stations are located at Dobbins, Loma Rica and Smartville. The Department of Forestry provides fire protection in the dry months during the official fire season as declared by the Director. Fire season generally runs from May to October. The Department of Forestry is the primary agency for fighting wildfires and also provides fire protection to structures located within their areas of responsibility. During the winter there is little danger of wildfire and accordingly

the Department of Forestry curtails many of its operations. While the Department will respond to winter fires with the personnel and equipment available during the winter off-season, inhabitants of the remote portions of the County receive a very low level of protection for structure fires during the winter months. The Department of Forestry is capable of providing year-round service through contract with local jurisdictions. By urban standards, the rural territory has limited fire protection, and this fact is reflected in the fire insurance ratios of 8 through 10 (1 being best and 10 being poorest) which apply over most of the rural unincorporated County. There is very little immediate backup strength in some of the rural fire protection station operations. The Department of Forestry has a state-wide backup system and can call for men and equipment from other areas as needed. This flexibility makes the entire State resources available to any area of need.

G. RECOMMENDATIONS FOR FIRE SAFETY:

1. Uniform Fire Code:

Yuba County should adopt the Uniform Fire Code and designate the foothills and mountains as hazardous fire areas. Under the Provisions of the Fire Code, the County, through the local fire chiefs, has broad powers to regulate hazardous fire area uses. With these powers the local fire chiefs

may close areas to the public during periods of danger, may prohibit smoking in hazardous areas, prohibit bonfires, may restrict the use of motorcycles and motor vehicles and may charge persons violating fire safety provisions the costs of fighting any fires which they cause. These County regulatory powers complement those of the Department of Forestry which also has powers to regulate clearances, dumpsites and activities in areas where they have fire protection responsibility.

2. Access

Yuba County should establish the following requirements of access to all new land divisions:

(a) Require that dead end roads will not be designed to serve more than ten (10) lots and will have a length of not more than one thousand (1000) feet.

(b) Improve access road for fire protection vehicles to a surface road 18 feet wide plus three-foot shoulders on each side. Grade should not exceed 15 percent. Inside radius of turns should not be less than fifty feet (50'). All road surfaces and bridges must sustain 35,000 pounds loading.

(c) Institute a program of specific neighborhood circulation plans and dead end roads. These specific

plans should identify the locations of possible road extensions to connect with other existing routes, of parallel routes to provide two means of access, of loop roads giving alternate access to critical sections of the roads or other such solutions tailored to the circumstances of the road. These specific plans should be adopted by the Board of Supervisors and used as a basis for road improvements, dedications and lot design in future land development approvals.

(d) Access to water storage area from the residential dwelling should be provided with an all weather surface road. The all weather surface road should be: (1) a minimum of twelve (12) feet wide, (2) the gravel should be crushed 3/4" and minus, and (3) the depth of the gravel should be 6".

3. Water Supply:

County should require water supply to new residences. Where no piped water supply is available, each parcel be provided with a 2,000 gallon capacity, that standard valves be used and that outlets be within eight feet of a firm road surface. The water supply may serve more than one site, with the storage capacity adjusted according to the number of sites. A variety of tanks, including in-ground swimming pools and local ponds are accepted.

4. Citizen Involvement:

Perhaps the most significant way in which government can contribute to the safety of fire-prone areas is to support and encourage the involvement of the residents of these areas in programs of fire safety. The Dobbins, Brownsville and Smartville areas have volunteer fire departments through which citizens take an active part in fighting fires. The Department of Forestry and other fire protection agencies have conducted programs with local groups of residents to encourage them to help in their own fire protection. Since the residents of the fire-prone areas are those most in jeopardy from wildfires, it is essential that they understand and work to resolve the threat of fire which affects them.

3. FLOOD HAZARDS:

Flooding is one of the costliest natural hazards in the State of California. Because of its geographical characteristics, flooding has been a long and continuing problem in Yuba County since settlements were established along the Feather, Yuba, and Bear Rivers. Rapid urbanization in the valley floor has exposed more people and structures to flooding hazards. Flood protection afforded by Oroville Dam, New Bullards Bar Dam and extensive levee systems have reduced the threat of wide-spread flooding in parts of the County, but the potential for serious flooding remains in floodplains and unprotected areas. Some parts of the County are now subject to an annual flood hazard.

A. FEATHER RIVER:

The Feather River system has a long history of floods. Beginning with the first account of flooding during the winter of 1839-40, large floods have occurred about once every six or seven years on the average.

The Feather River enters the Sacramento Valley at Oroville and is joined by the Yuba River some 30 miles downstream at Marysville. The Bear River joins the Feather River about 13 miles downstream from Marysville and about three miles upstream from the small town of Nicolaus. Marysville and Yuba City, located on opposite banks of the Feather River, are situated in the natural flood plains of the Feather and Yuba Rivers. However, both cities are afforded substantial flood protection by Oroville Reservoir and existing levee systems constructed along the rivers. However, the communities of Linda and Olivehurst have a greater than 1% chance of being flooded in any given year. The greatest flood of record on the Feather River in the Marysville and Yuba City area prior to construction of Oroville Dam occurred in December 1955. Thirty-eight lives were lost and property damage amounted to about $21,000,000 in the Marysville-Yuba City area.

The greatest flood since the start of Oroville Dam in the Marysville-Yuba City area occurred in December 1964. Had it not been for the available storage and reduced flow

conditions afforded by the partially completed Oroville Dam, the combined flow of the Feather and Yuba Rivers at the Marysville-Yuba City area could have resulted in the most disastrous flood of record.

B. YUBA RIVER

Above the foothill line, the Yuba River drainage basin lies entirely within Sierra and Nevada Counties, and is drained by three major tributaries, the North Yuba, Middle Yuba, and South Yuba Rivers. The North and Middle Yuba Rivers join about 5 miles downstream from New Bullards Bar Dam to form the Yuba River. As pointed out in this report, Yuba River eventually joins the Feather River at the City of Marysville.

The largest flood of record on the Yuba River occurred in December 1964. The flood stages at the Yuba River gage near Marysville exceeded the previous high (1955) by more than 1 1/2 feet. The second largest flood of record on the Yuba River occurred in December 1955.

The Marysville Dam project, authorized for construction by the Corps of Engineers, could provide a high degree of flood protection along Yuba and Lower Feather Rivers. The project, consisting of a 900,000 acre-foot reservoir near Smartville, presently is being re-evaluated by the U.S. Army Corps of Engineers.

C. BEAR RIVER:

The Bear River drains a long and narrow basin extending from the Sierra foothills to the Feather River on the valley floor. The river starts out as a clear, cold, fast-flowing stream. As it is impounded at Rollins, Combie, and New Camp Far West Reservoirs, the water is slowed down, warmed up, and generally changed in quality. At its confluence with the Feather River, the Bear River is slow moving, relatively warm, and contains nutrients from municipal effluent and agricultural return flow.

The lower Bear River Basin suffered flood damages during the floods of 1937, 1940, 1943, 1950, 1955, 1962, and 1964. The 1955 flood caused extensive damage in the area between Yuba City and Sacramento River from a right bank Feather River levee break, in South Bear River area from a left bank Feather River levee break, and in Reclamation District 784 from an Interceptor Canal levee failure.

Principal tributary streams entering Bear River on the valley floor are Dry Creek, Western Pacific Interceptor Canal, and Yankee Slough. The Western Pacific Interceptor Canal intercepts the flows of Best Slough, Reeds, and Hutchinson Creeks, and receives drainage from the Linda and Olivehurst areas.

The flood problem areas (Figure 6) in the Bear River Basin can be divided into three major types:

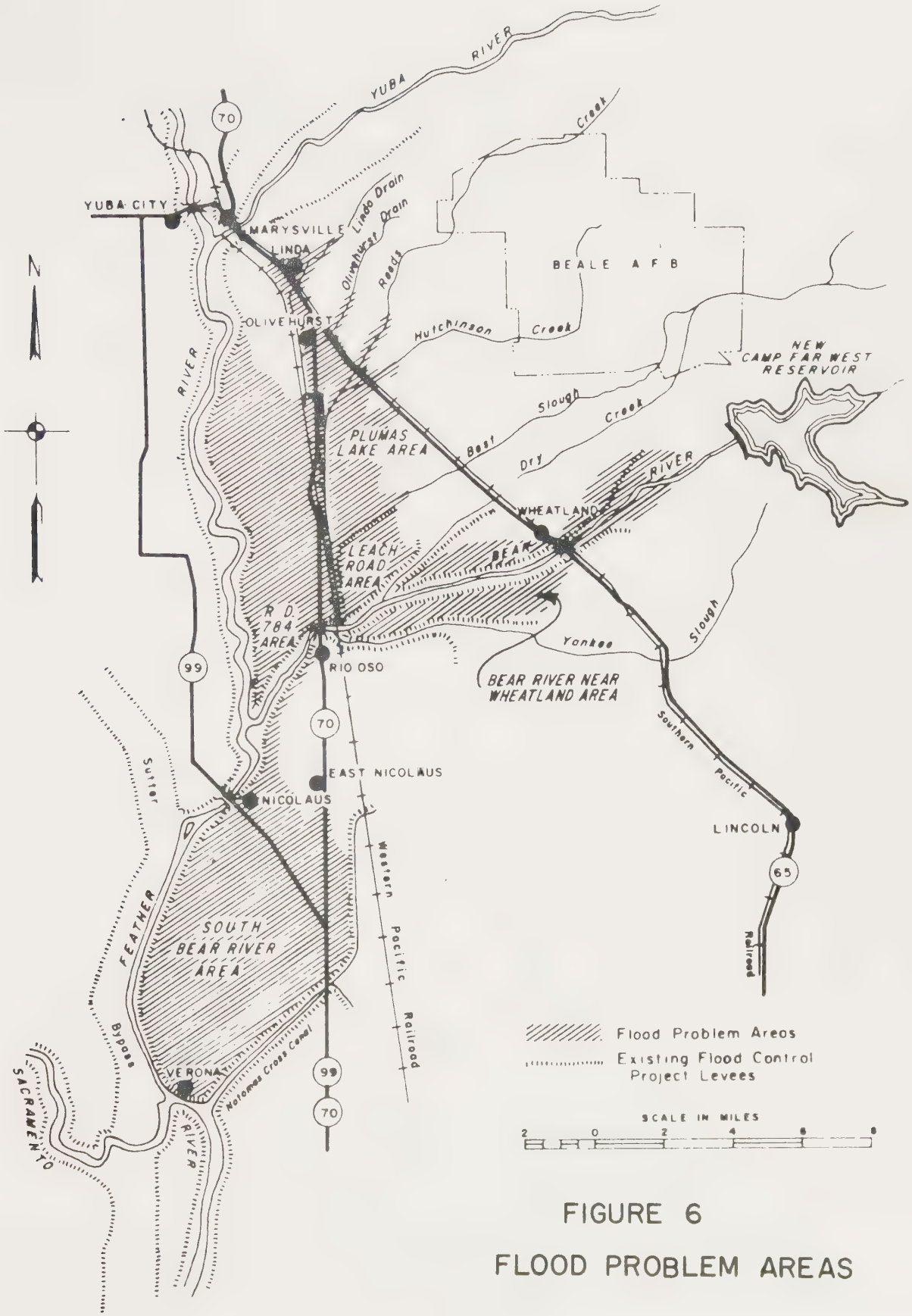


FIGURE 6

FLOOD PROBLEM AREAS

1. The first type of flooding that can occur affects very large areas and results from ponding behind project levees caused by breaks or overtopping of upstream project levees.

2. The second type of flooding that can occur results from high Feather River stages and Bear River flows which restrict outflows from the Interceptor Canal and cause flooding in the unprotected areas above the canal.

3. The third type of flooding consists of stream overbank flow along those reaches not protected by project levees.

As shown in Figure 6, there are four areas on the valley floor subject to flooding from levee breaks. The areas and their potential flood plains are Reclamation District 784 with 13,800 acres, South Bear River with 26,500 acres, Leach Road with 2,550 acres, and Bear River near Wheatland with 8,340 acres. Flooding in the Plumas Lake area is usually caused by a combination of Bear River backwater and local inflow that ponds in the area until Bear River stages recede enough to allow gravity outflow from the area via the Interceptor Canal. Because the area is not protected by levees, some flooding can be experienced on a yearly basis. Also, flooding in the Plumas Lake area restricts the discharge of runoff from the Linda and Olivehurst urban areas, which compounds overbank flood problems in those areas.

A flood control project involving levees and channel improvements in the Linda-Olivehurst area has been authorized by Congress for construction by the Corps of Engineers. The project, now in the preconstruction planning phase, will provide a high degree of flood protection to Linda and Olivehurst from local flooding.

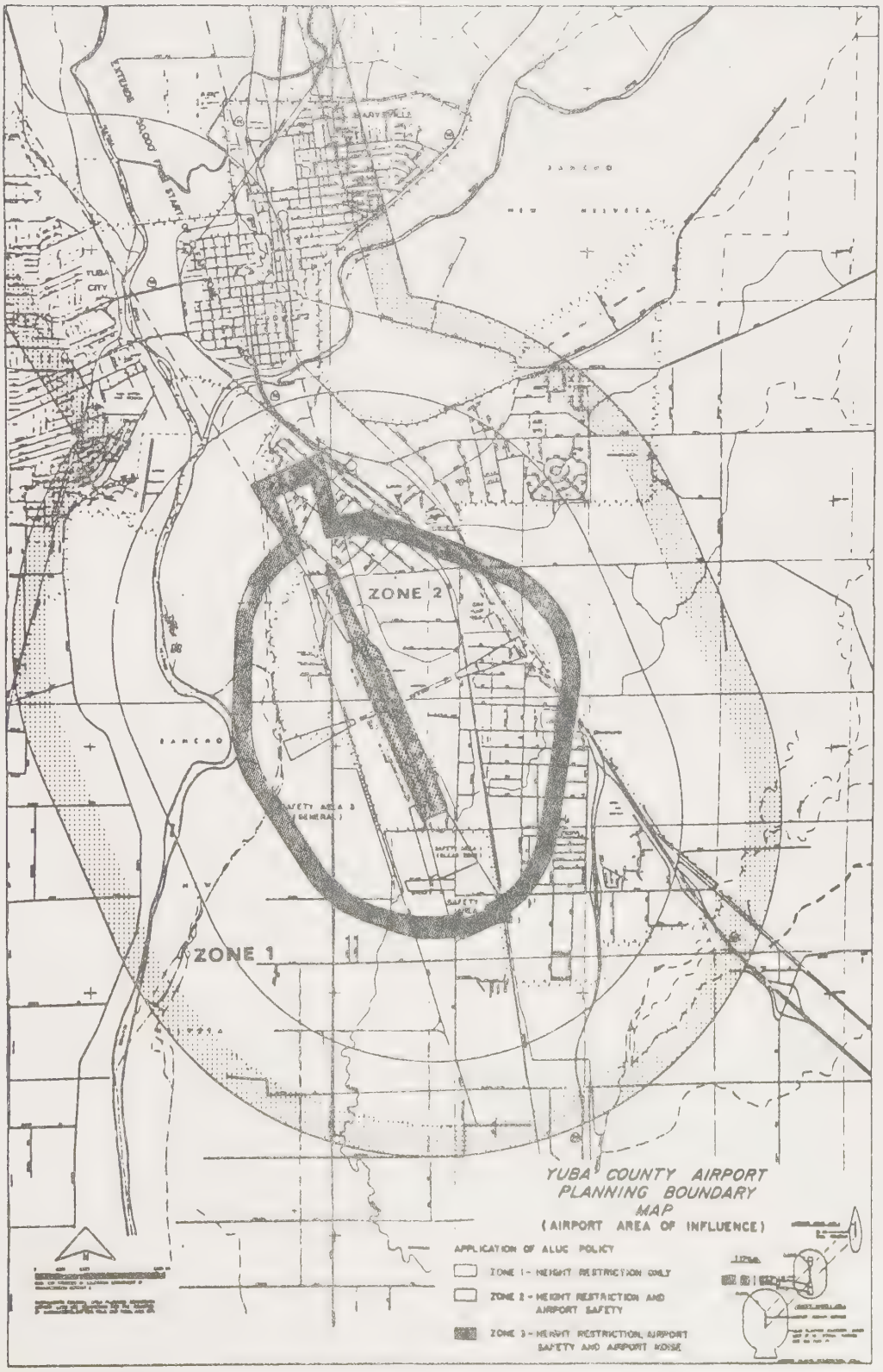
4. AIRPORT HAZARDS

In addition to noise and height restrictions surrounding airports, airport safety must also be taken into consideration in the planning process. The Sacramento Regional Area Planning Commission has been designated as the Airport Land Use Commission (ALUC) for the counties of Sacramento, Sutter, Yolo and Yuba under provisions of Article 3.5 of the California Public Utilities Code. The Code specifies that the Airport Land Use Commission shall determine planning boundaries around each public and military airport within their jurisdiction. In 1974, the Airport Land Use Commission has adopted a plan showing planning boundaries which includes the area of influence. (See Figure 7).

ZONE I - AIRPORT HEIGHT RESTRICTION AREA:

The airport height restriction area defines the navigable airspace requirement for an airport and is the most extensive of the three areas encompassing the entire Area of Influence. Height limitations on structures within this zone are defined by imaginary surfaces constructed per FAR Part 77.

FIGURE 7


ZONE 2
ZONE 1
YUBA COUNTY AIRPORT
PLANNING BOUNDARY
MAP
(AIRPORT AREA OF INFLUENCE)
APPLICATION OF ALUC POLICY
ZONE 1 - HEIGHT RESTRICTION ONLY
ZONE 2 - HEIGHT RESTRICTION AND AIRPORT SAFETY
ZONE 3 - HEIGHT RESTRICTION, AIRPORT SAFETY AND AIRPORT NOISE

ZONE 2 - AIRPORT SAFETY AREA:

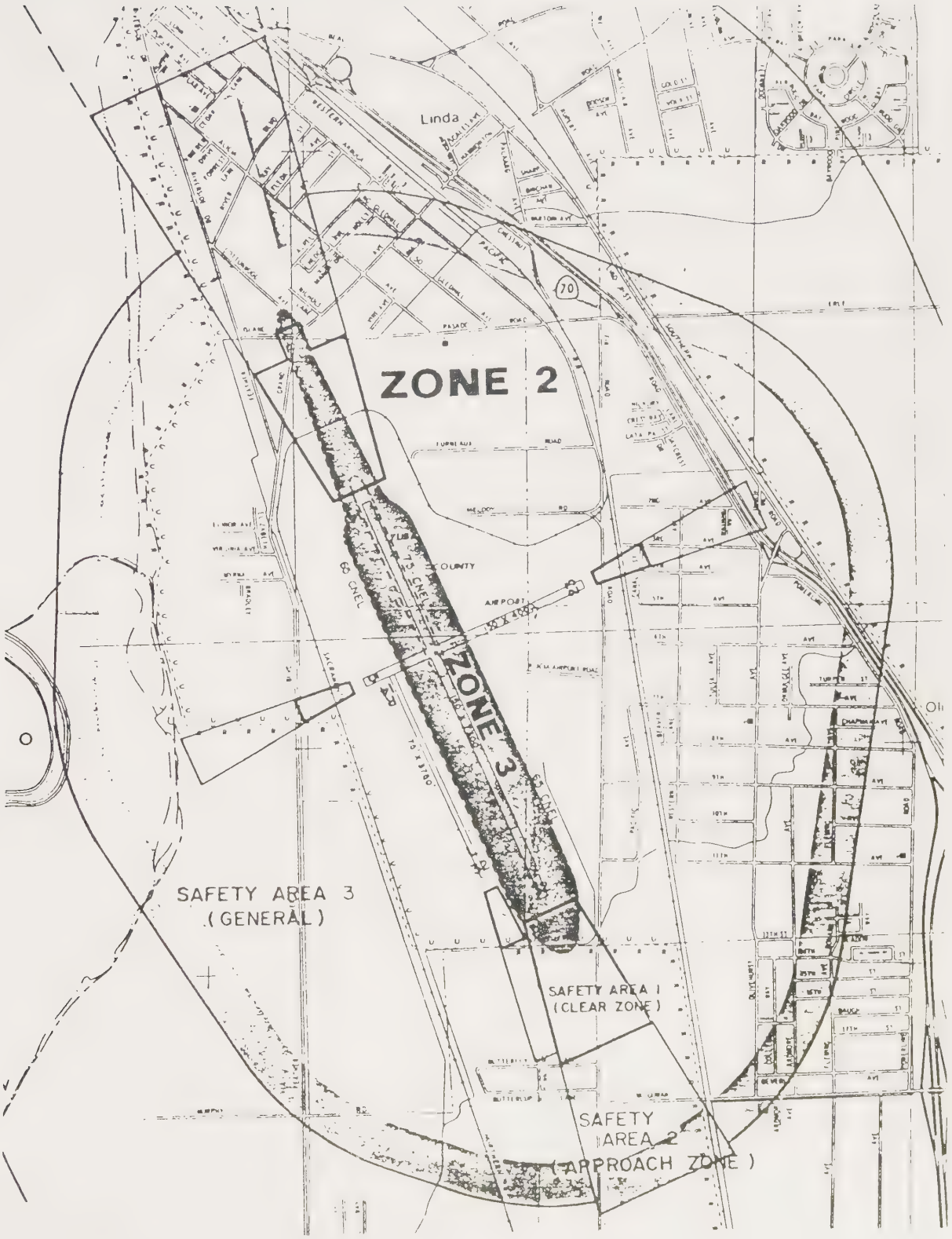
Within this zone safety is to be considered in addition to height restriction. The boundary of the airport safety areas conforms in general to the outer limit of the airport horizontal surface as defined by FAR Part 77. There are three sub areas which reflect the varying degrees of concern of the Airport Land Use Commission. (See Figure #8).

Safety Area 1 (Clear Zone): This is the most restrictive safety area; its borders coincide with the runway clear zone as defined by the Federal Aviation Administration.

Safety Area 2 (Approach Zone): This area is defined as the land area beneath the horizontal projection of the runway approach surface established by FAR Part 77. It initiates at the terminus of the clear zone and extends to the point where the approach surface intersects the horizontal surface. As is the case with Safety Area 1 (Clear Zone), the actual dimension of this safety area depends upon the type of approach planned for the runway end, i.e., visual, non-precision, or precision.

Safety Area 3 (General): This is the least restrictive of the three safety areas and encompasses the remaining portions of Zone #2. This area should generally coincide with that overflown by local traffic patterns.

FIGURE 8



AIRPORT SAFETY AREA

ZONE 3 - AIRPORT NOISE AREA:

Within the airport noise area, the impact of airport or aircraft generated noise will be considered in addition to height restriction and safety. The boundary for the airport noise area is determined by using the California Noise Standard which sets forth that the criterion Community Noise Equivalent Level (CNEL) for existing public airports is 70 dB until December 31, 1985 and 65 db thereafter.

One of the major functions of the Airport Land Use Commission is to assure the safety of people and property located close to an airport from accidents involving aircraft.

Approximately 50% of accidents involving civil aircraft occur within airport boundaries. Approximately 15% occur outside airport boundaries and within one mile of the airport. These accidents are classified as near airport accidents. Of near airport accidents, approximately 60% are concentrated within narrow lands at both ends of the runway. 40% are randomly distributed throughout the remaining area.

5. JURISDICTIONS OF FIRE AND POLICE PROTECTION AGENCIES IN YUBA COUNTY

Land within the County is owned by Federal, State, County and municipal levels of government, and by private citizens. In the same manner, fire and police protection are provided by several different agencies as well as volunteer units. The following is a list of agencies responsible for fire and police protection within the County.

A. Fire Protection:

Beale Air Force Base Fire Department

California Division of Forestry: Dobbins Fire Station
Loma Rica Fire Station
Smartville Forest Fire Station

City of Marysville Fire Department

Foothill Volunteer Fire Department

Linda Fire Department

Olivehurst Fire Department

Plumas-Brophy Volunteer Fire Department

Smartville Volunteer Fire Department

United States Forest Service

Wheatland Volunteer Fire Department

B. Police Protection:

Beale Air Force Base Security Police

California Highway Patrol

City of Marysville Police Department

City of Wheatland Police Department

Yuba County Sheriff Department

6. EMERGENCY SERVICES:

Yuba County has been involved in emergency preparedness planning since 1971, when the first ordinance was adopted declaring the intent to prepare and plan for civil defense and emergency situations.

The Yuba County Office of Emergency Services is the designated agency with responsibility for planning and coordinating the County's emergency preparedness program. One of the main functions of the Office is to insure that an overall Emergency Services and Operational Plan (ESOP) of the County of Yuba is developed and continually maintained. The most current ESOP contains three basic purposes, and they are:

A. To provide a basis for the conduct and coordination of operations and the management of critical resources during emergencies,

B. To establish a mutual understanding of the authority, responsibilities, functions, and operations of civil government during emergencies, and

C. To provide a basis for incorporating into the County emergency organization non-governmental agencies and organizations having resources necessary to meet foreseeable emergency requirements.

The Office of Emergency Services will become the command center for operations in any emergency or disaster. The Office will have representatives from law enforcement,

fire, health, welfare, engineering, and others, depending on the situation.

ENVIRONMENTAL IMPACT REPORT

1. DESCRIPTION OF PROJECT:

The Seismic Safety and Safety Elements are two of nine General Plan Elements that are statutorily mandated pursuant to Section 65302(f) and (i) of the California Government Code.

The purpose of the Seismic Safety and Safety Elements is to provide information on seismic problems and safety concerns relating to earthquakes, geologic distrubances, fires, floods and various other safety matters.

2. DESCRIPTION OF ENVIRONMENTAL SETTING:

Yuba County is located in the north central part of California. The County encompasses 640 square miles of land area, and extends from the Feather River east across the Sacramento Valley and up the western slope of the Sierra Nevada Mountains. The terrain varies in elevation from approximately 30 feet above sea level at the Feather River to over 4,800 feet above sea level in the northeast corner of the County.

Approximately 5% of the County's land area is urbanized. The major urban area and population center is the City of Marysville, located at the confluence of the Feather and Yuba Rivers on the County's western boundary.

There are three geographically distinct environments within the County: the Sacramento Valley, the Sierra Nevada foothills,

and the Sierra Nevada Mountain uplands.

The Sacramento Valley portion of the County extends from the Feather River in an easterly direction to approximately 250 feet above sea level. The Valley is covered with rich soils and is intensively cultivated.

The Sierra Nevada foothills extend from the 200 foot level to the 2,000 foot level. The foothills consist of rolling to steep hills, low ridges and narrow valleys. The vegetation varies from oaks and grasses at the lower elevations, to dense stands of hardwoods and shrubs at the higher elevations.

The mountainous portion of the County, above 2,000 feet, is covered primarily with a coniferous forest. Steep canyons cut by the Yuba River and other streams are conspicuous features of the mountains.

3. ENVIRONMENTAL IMPACT:

The following information describes, to the fullest extent possible, effects on the natural and man-made environment that would result from implementation of the goals and objectives of this report. It is not possible to define or quantify specific environmental effects resulting from the adoption of the Seismic Safety and Safety Elements since they cannot be predicted with any certainty at this time. Therefore, the following description of potential environmental effects will only be evaluated in general terms:

A. LAND USE PATTERNS:

Minor shifts in planned land use patterns could occur. These shifts may occur in response to identified geologic or safety hazards brought to light by the Seismic Safety Elements. Subsequently, any potential land use shift may create pressure to develop productive agricultural lands or areas of unique vegetative or wildlife habitats. These pressures and associated detrimental impacts could be avoided with adequate provision of areas planned for development away from areas that have seismic safety constraints.

B. LAND FORMS:

In general, the implementation programs would not have significant effects on land forms. Mitigation measures taken to reduce damage from ground failure could result in modification of land forms with grading designed to improve slope stability. The nature and extent would depend on particular site conditions, type of development and the local controls in force to protect environmental quality.

C. WATER AND OTHER RESOURCES:

County-wide the implementation of Seismic Safety and Safety Elements would have little effect on water and other resources.. The exceptions would be in possible decreased erosion and sedimentation that would result from measures to improve slope stability. Control of

subdivisions to meet seismic safety objectives could have similar effects on protecting water quality, vegetation and wildlife.

4. ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED IF THE PROJECT IS IMPLEMENTED

No adverse environmental effects will occur if the Seismic Safety and Safety Elements are implemented and in most cases implementation will improve the environment.

5. MITIGATION MEASURES

Since no adverse environmental effects will occur if these elements are implemented and since the intent of the elements is to improve the environment of Yuba County, no mitigation measures are necessary.

6. ALTERNATIVES TO THE PROPOSED PROJECT

Since the State of California requires the preparation and adoption of Seismic Safety and Safety Elements, a no action alternative was not considered.

7. RELATIONSHIP BETWEEN SHORT TERM USES OF MAN'S ENVIRONMENT AND THE MAINTNENANCE AND ENHANCEMENT OF LONG TERM PRODUCTIVITY

The Seismic Safety and Safety Elements seek to maintain current uses of the environment with improved safety while imposing additional constraints on new development. Even though there may be some short term increases in public and private costs, the long term productivity should be greatly enhanced

through greater safety and improved ability to respond to earthquakes, floods and fires, providing increased apportunities for survival for present and future generations.

8. IRREVERSIBLE ENVIRONMENTAL CHANGES WHICH WOULD BE INVOLVED IN THE PROPOSED PROJECT SHOULD IT BE IMPLEMENTED

Any environmental changes that may occur from the implementation of the Seismic Safety and Safety Elements would be small but beneficial, and most likely difficult to discern.

9. GROWTH INDUCING IMPACT OF THE PROPOSED PROJECT

Adoption and implementation of the Seismic Safety and Safety Elements will not have a growth inducing impact upon Yuba County, however, it will make Yuba County a better place to live.

10. WATER QUALITY ASPECT

Certification is not required for review of General Plan Elements by Water Quality Control Board.

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